

The Roles of Typological Proximity and L2 Status in L3 Lexical Acquisition: Evidence from Chinese–English–Japanese Trilinguals

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Abstract. Within the field of third language acquisition, typological proximity and L2 status have been consistently identified as two determining factors governing how previously acquired languages affect the acquisition of a third. To date, however, it remains unclear which of the two factors plays a more influential role in L3 lexical processing. This study aims to disentangle these variables and investigate their relative influences. To this end, we will employ a lexical decision task to test participants' recognition of L3–L3-Japanese words: Chinese–Japanese cognates, English–Japanese cognates, and non-cognates. Reaction time and accuracy will be recorded for two groups of trilinguals: Chinese (L1)–English (L2)–Japanese (L3) and English (L1)–Chinese (L2)–Japanese (L3). We predict that when the language distance between L1–L3 and L2–L3 is substantial, typological proximity may override L2 status as the determining factor in the selection of a source language. This study will shed light on how previously acquired languages affect L3 lexical acquisition, offering empirical support for the refinement of existing theoretical models of cross-linguistic transfer and providing pedagogical guidance for improving L3 vocabulary learning efficiency.

Keywords: Cross-linguistic influence, L3 lexical acquisition, Typological proximity, L2 status

1. Introduction

The global spread of multilingualism has led to a growing population of bilinguals and trilinguals [1]. In such contexts, extensive investigation within second language acquisition (SLA) has revealed that learners' previously learned languages exert an influence on the learning of an additional language, a phenomenon commonly referred to as cross-linguistic influence (CLI) [2,3].

However, empirical research on CLI in L3 lexical acquisition remains comparatively scarce [4,5]. In particular, findings to date have been inconclusive with respect to whether typological proximity or L2 status serves as the main determinant of transfer during third language acquisition. One reason is that these two factors are often confounded in previous research. Also, most prior studies have focused on trilinguals with languages drawn from the Indo-European families [6,7], thus relatively

little is known about CLI in trilinguals whose languages are typologically distant, such as Chinese, English, and Japanese.

Therefore, the current study investigates Chinese–English–Japanese trilinguals through a lexical decision task designed to disentangle the roles of typological proximity and L2 status. In doing so, it aims to provide further evidence for the relative roles of these two factors in L3 lexical acquisition.

2. Literature review

A substantial body of research has sought to identify which factor has the greatest impact on L3 lexical acquisition [8–10], with the current debate focusing primarily on typological proximity and L2 status [11].

2.1. Typological proximity

Several studies have suggested that typological proximity would play an important role in cross-linguistic transfer in L3 lexical acquisition. Typology is the systematic classification of languages or their components on the basis of similarities of their formal features [12]. The effect of typological proximity was found to be the most determinant in word learning of L3 according to early empirical studies [6,8,13].

Following this line of research, Rothman proposed the Typological Primacy Model (TPM), formalizing the claim that the typologically closest language to L3 is the source language that exerts the greatest influence on L3 learning [9,14,15]. According to the cognitive economy principle, the language parser tends to select the path of minimal cognitive load. It implicitly infers whether L1 or L2 is typologically closer to L3, generating the initial grammar or vocabulary of the third language.

Subsequent empirical studies have provided further support for this model. Lijewska and Chmiel examined Polish–German–English trilinguals with a translation task, focusing on how subjects render words from their third language (English) into their first or second language in sentence contexts [16]. Although using only L2–L3 cognates, Lijewska and Chmiel found a significant facilitation effect in L3–L1 translation. They argued that the pattern found may be explained by the comparatively strong typological similarity between Polish (L1) and English (L3).

In line with these studies, Mieszkowska and Otwinowska also conducted a study with L1 Polish speakers who were proficient in L2 English and possessed various other languages as L3 (Ln) [17]. They were requested to perform an oral translation of a Danish text—a language they were unfamiliar with. It was discovered that success in translating cognates and understanding the text depended largely on the typological similarity between Danish and the participants' known languages. The results indicated that typological effects might facilitate learners' ability to infer meaning even in previously unknown languages.

Moreover, Schepens et al. analysed a large sample of mono- and multilingual speakers of Dutch, quantifying both lexical and morphological distances [18]. Not surprisingly, the results also showed that the degree of similarity of L1 and L2 to L3 was a strong predictor of success with L3. Importantly, this study advanced the methodological measurement of typological proximity.

Overall, the studies presented above can be traced from empirical observation to theoretical modelling and then validation over different tasks and languages, showing the important role of typology in L3 lexical transfer.

2.2. L2 status

In addition to the large body of studies supporting the role of typological proximity, there are also studies emphasising L2 status as a determinant in third language (L3) lexical acquisition [19,20]. Cenoz defined L2 status as “any language other than one’s native language (L1).” [13] De Angelis further argued that individuals tend to classify languages other than their native tongue within a category labeled as “foreign languages”, fostering a cognitive link between them, while the native language remains separate from this mental category [21]. This “association of foreignness” promotes lexical transfer from non-native languages, thereby conferring the L2 a preferential role in cross-linguistic influence.

Furthermore, Bardel and Falk subsequently put forward the L2 Status Factor Hypothesis (henceforth L2SF), suggesting that in L3 acquisition, L2 plays a privileged role as a source of transfer [7,10,22]. They argued that L1 grammar is mostly maintained by a procedural memory, whereas grammars and lexicons acquired in adulthood depend more on declarative memory. This distinction makes the L2 cognitively more aligned with the L3, thereby giving it a stronger role in shaping third language acquisition. These findings further reflected the underlying cognitive mechanism for L2 status.

Subsequently, this model has been applied to the lexical domain. For example, Mickan, McQueen, and Lemhöfer asked Dutch–English bilinguals to recall newly learned Spanish words after first naming the same pictures in either Dutch or English. Results indicated that the greatest interference came from English (L2), highlighting the important role of L2 status in lexical processing [23].

Most recently, De Bruin conducted the speeded naming task and rhythm task and found that non-native languages may interfere more with each other than the native language [24]. This result was plausibly explained by the stronger inhibitory control exercised over the L1, which enhanced our understanding of L2 status under different task conditions.

In sum, this line of research has employed diverse methodological approaches, progressing from theoretical formulations to empirical testing. The findings collectively demonstrate that L2 status plays a decisive role in third language acquisition.

2.3. The current study

Taken together, research on third language (L3) lexical acquisition has separately investigated the role of typological proximity and L2 status. However, it remains controversial which factor plays the dominant role in third language acquisition. Studies on typological proximity often confounded L2 status with typological proximity [25], making it hard to separate the independent effect of these two factors and drawing limited conclusions. Moreover, prior research has mostly focused on trilinguals within the Indo-European language family; the distance between L1–L3 and L2–L3 is typically small, and thus several studies have supported the key role of L2 status. However, when the extent of typological divergence between the L1–L3 and L2–L3 combination becomes substantial, it remains largely unknown whether typological proximity may override L2 status to become the stronger predictor.

The current study, therefore, aims to disentangle the distinct contributions of typological proximity and L2 status to the process of acquiring vocabulary in a third language and to evaluate their relative influence. Specifically, we will employ a mirror-image experimental design comparing two groups of trilingual participants: Chinese(L1)–English(L2)–Japanese(L3) trilinguals and English(L1)–Chinese(L2)–Japanese(L3) trilinguals. In this design, L3 (Japanese) is typologically

more proximate to one of the previous languages (Chinese), showing similarity in orthography, phonology, and semantics, whereas its similarity to English is largely limited to phonology and semantics.

The study seeks to address the following question:

Which factor serves as a stronger predictor when determining the source language of lexical transfer in L3 acquisition: typological proximity or L2 status?

3. Hypothesis

It is hypothesised that when a learner's third language (L3) exhibits substantially greater typological proximity to one of their previously acquired languages (L1 or L2) than to the other, such typological proximity will constitute the primary predictor of lexical acquisition in the L3.

4. Methods

4.1. Participants

We aim to recruit around 60 Chinese–English–Japanese trilinguals aged 18–30 who have attained at least B1 proficiency in their L2 and JLPT N3 or higher in their L3. Participants will be divided into two groups according to their first language: Group A (L1 Chinese, L2 English) and Group B (L1 English, L2 Chinese). Their proficiency in the second language will be evaluated through the Q-BEx Bilingual Experience Questionnaire [26].

4.2. Materials

A lexical decision task (LDT) will be employed to examine the online processing of L3 Japanese words. The stimulus set consists of 120 real Japanese words and 120 matched pseudowords generated by UniPseudo [27]. Within the set of real words, 40 items are Chinese–Japanese cognates, 40 are English–Japanese cognates, and 40 are non-cognates. Cognates are described as words in two distinct languages that exhibit both similar meaning and form, whether orthographically, phonologically, or both [28]. To quantify the proximity, orthographic and phonological similarity will be measured using Levenshtein distance, and semantic transparency will be evaluated by native speakers. Moreover, all experimental words will be controlled for lexical frequency (50–500 occurrences per million words, based on the Balanced Corpus of Contemporary Written Japanese, BCCWJ) and word length (3–6 morae). All continuous variables will be standardized using z-scores. An example stimulus is shown below:

Table 1. Stimulus examples

Condition	Type	Example
Chinese–Japanese cognate	real word	負担(负担)
		出頭(出头)
	pseudoword	星橋(星桥)
		風泉(风泉)
English–Japanese cognate	real word	ハウス (house)
		スコア (score)
	pseudoword	サンドリン (sandrín)
		バスポー (baspo)
non–cognate	real word	はなび (烟花 — fireworks)
		みかん (橘子 — orange)
	pseudoword	みとら
		すねき

4.3. Apparatus

The task will be administered on a laptop using PsychoPy [29], and responses will be collected through keyboard input.

4.4. Procedure

The experiment will take place in a lab. After receiving instructions and completing 12 practice trials (6 words, 6 nonwords), participants will be asked to complete two blocks of 120 randomised trials. Each trial will start with a fixation cross displayed for 500 milliseconds, after which a stimulus will appear and stay visible until the participant provides a response. Participants will press designated keys to indicate whether the string is a real Japanese word. The session will last approximately 30 minutes.

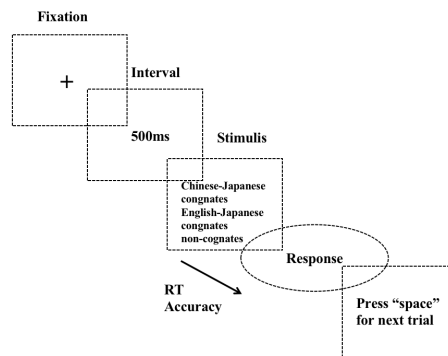


Figure 1. Example of experimental procedure

4.5. Analysis

Mean reaction times and accuracy rates will be computed for each stimulus type and group. Subsequently, linear mixed-effects models in R [30] will be conducted to examine the effects of Cognate Type (L1–L3 cognates, L2–L3 cognates, and non-cognates) and Group (Group A and Group B) on reaction time and accuracy, with participants and items included as random effects.

5. Discussion and implication

5.1. Discussion

First, if both groups of students are observed to show shorter reaction times and higher accuracy for Chinese–Japanese cognates (As shown in Figure 2, the shaded and dotted balloons represent the L1 for Group A and the L2 for Group B), this pattern would suggest that typological proximity predominates over L2 status.

Second, if both groups are found to exhibit shorter reaction times and higher accuracy for L2–Japanese cognates (English–Japanese for Group A and Chinese–Japanese for Group B, as shown through the uncolored balloons depicted in Figure 2), this would indicate that L2 status predominates over typological proximity.

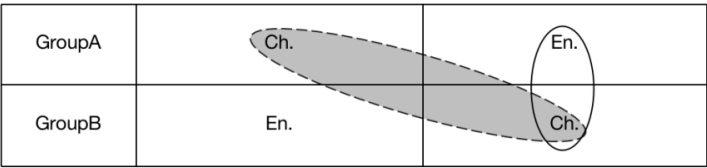


Figure 2. Discussion: typological proximity and L2 status

5.2. Implication

This study will provide empirical evidence to refine existing theoretical models of cross-linguistic transfer. In particular, these findings are expected to advance our insight into how typological proximity and L2 status influence vocabulary learning in a third language across typologically distant languages. Moreover, the results may offer pedagogical guidance for trilingual instruction, suggesting that selective engagement of L1 or L2 could enhance the efficiency of L3 vocabulary learning.

5.3. Limitation

The study assumes comparable cognitive abilities among participants, whereas individual differences in working memory or reasoning ability could affect the results. Second, the potential predominant role of L1 might not be explicitly considered and may override both typological proximity and L2 status.

5.4. Future research

Future research could employ eye-tracking or neuroimaging techniques to further validate findings obtained from online processing experiments. Moreover, the experimental paradigm could be

extended to language production tasks, such as picture naming or translation, which will provide a more comprehensive assessment of L3 lexical acquisition. Finally, to enhance the precision and applicability of the proposed framework, it is necessary to establish quantifiable criteria to classify linguistic distances between L1–L3 and L2–L3 as “large” or “small”.

6. Conclusion

This study will examine the relative roles of typological proximity and L2 status in L3 lexical acquisition with a new combination of languages. Despite the potential influence of L2 status, our findings are expected to suggest that when L3 is typologically closer to one of the previously acquired languages, this proximity becomes the primary factor in lexical processing. These results will provide empirical evidence for refining theoretical models of cross-linguistic transfer and offer practical insights for enhancing L3 vocabulary learning, particularly in multilingual settings. Future research could expand on these findings by incorporating different techniques and tasks to further explore the interplay between typological proximity and L2 status.

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